

REMARKS

Initially, Applicants note that the last Office Action, mailed May 11, 2006, was issued as a FINAL Office Action despite Applicants' submission of an RCE with Applicants prior response. For at least this reason, and the fact that the new limitations of claim 60 were not considered, Applicants respectfully submit that the finality of the present action is error and request withdrawal thereof.¹

Finality of an Office Action

As noted in MPEP 706.07(h)(VIII), after an RCE, "the action immediately subsequent to the filing of an RCE...may be made final only if the conditions set forth in MPEP § 706.07(b) for making a first action final in a continuing application are met." Among other things, MPEP § 706.07(b) notes that a first Office Action may be made final only where "*all* claims of the new application [] are drawn to the same invention claimed in the earlier application." (emphasis added). Applicants note that the past response by Applicants included various claim amendments, including amendments to claim 60 which was amended to recite wherein "generating a new video stream includes making available one or more reference images for the at least one B frame," which does not appear to have been considered and which is clearly drawn to a different scope than the embodiment recited in claim 60 prior to the amendment.

Accordingly, Applicants submit that the last filed response (Amendment B) was clearly drawn to a different scope than the previously presented response in Amendment A. More specifically, the prior pending claims, including the pre-amendment claim 60, did not recite reference images, let alone reference images that are made available to B frames while generating a new video stream. Accordingly, and for at least these reasons, claim 60 was, in the last action, drawn to a different invention than was previously claimed. Accordingly, the RCE and response did not include "all" claims drawn to the same invention as previously claimed, and the finality of the present Office Action should therefore be withdrawn.

Claim Status

¹ This was discussed with the Examiner on June 12, 2006, during which time the Examiner acknowledged that the new limitations of claim 60 were not considered and appeared to agree that the Finality of the last action was not proper for at least this reason.

In the Final Office Action, mailed May 11, 2006, claims 1-60 were under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. In addition, claims 1-59 were rejected under 35 U.S.C. § 102(e) as being anticipated by Panusopone (U.S. Patent No. 6,647,061), and claims 12, 29, 36, 48 and 55 were further rejected under 35 U.S.C. § 103(a) as being unpatentable over Panusopone (U.S. Patent No. 6,647,061) in view of Wee et al. (Secure Scalable Streaming Enabling Transcoding Without Decryption, IEE International Conference on Image Processing, October 2001).^{2, 3}

By this paper, claims 1, 19, 33, 39, 52 and 58 have been amended, claim 61 added, and no claims have been cancelled.⁴ Accordingly, claims 1-61 remain pending for reconsideration, and of which the only independent claims at issue are claims 1, 19, 33, 39, 52 and 58. All of the pending claims are directed to embodiments corresponding to spatial transcoding a video stream.

As recited in claim 1, for example, a method for transcoding an incoming video stream to reduce the bit rate of the video stream is described. The method includes decoding the incoming video stream, including at least one B frame in the incoming video stream, where parameters of the incoming video stream are extracted and used to generate a new video stream. Further, the size of images of the incoming video stream are spatially reduced horizontally and vertically by a selected factor in a manner that the at least one B frame is considered while spatially reducing the images. In addition, a new video stream is generated that includes spatially reduced images using one or more of the extracted parameters, including at least one parameter corresponding to the at least one B frame, and less than all of the parameters are re-computed for the new video stream. In addition, included within the spatially reduced images are one or more B frames.

Claim 19 is directed to a similar method, but wherein the transcoding and spatial reduction of the incoming video stream includes resampling. Claim 33 is also directed to a

² Although claims 12, 29, 36, 48 and 55 were rejected under 35 U.S.C. § 102(e) as being anticipated by Panusopone, the Office Action notes that "Panusopone doesn't disclose performing fine grain motion estimation for the MVs." (Office Action, p. 13). Inasmuch as fine grain motion estimation for the motion vectors is an express recitation of the listed claims, and the Examiner has expressly acknowledged that the allegedly anticipatory art fails to disclose the recited element, Applicants treat claims 12, 29, 36, 48 and 55 as being rejected only under 35 U.S.C. §§ 103(a) and 112.

³ Although the prior art status of the cited art is not being challenged at this time, Applicants reserve the right to challenge the prior art status of the cited art at any appropriate time, should it arise. Accordingly, any arguments and amendments made herein should not be construed as acquiescing to any prior art status of the cited art.

⁴ Support for the amendments to the claims can be found throughout the original application, including, but not limited to, the disclosure found in paragraphs 33, 36, 39, 41, 46, and 60.

similar method, but wherein the transcoding and spatial reduction of the incoming video stream includes subsampling. Claims 39 and 52 are directed to computer program product claims corresponding to the methods recited in claims 19 and 33, respectively. Finally, claim 58 is directed to a transcoder, which is configured to implement the foregoing methods.

Rejections Under 35 U.S.C. § 112, first paragraph

As noted previously, each of the pending claims has been rejected under 35 U.S.C. § 112, first paragraph for failing to comply with the written description requirement. Applicants respectfully traverse.

The written description is satisfied when the patent specification, including any originally filed claims, "describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention." *Moba, B.V. v. Diamond Automation, Inc.*, 325 F.3d 1306, 1319, 66 U.S.P.Q.2d (BNA) 1429, 1438; *see also* M.P.E.P. § 2163(I). Moreover, support for the claim limitations may be express, implied, or inherent. M.P.E.P. § 2163(I)(B).

When an amended claim is the basis of rejection on the written description requirement, the "examiner has the initial burden of presenting evidence or reasoning to explain why persons skilled in the art would not recognize in the original disclosure a description of the invention defined by the claims." M.P.E.P. § 2163(II)(A)(3)(b).

In rejecting the pending claims, the most recent Office Action summarily states that the "specification doesn't disclose 'spatially reducing images of the incoming video stream by a selected factor, and such that the at least one B frame is considered during the spatially reducing images' and that 'the spatially reduced images in the new video stream include at least one B frame.'" (Office Action, pp. 3, 4). In other words, the Office Action appears to reject the pending claims because the language quoted from the claims is not expressly found within the application. At no time, however, does the Office Action "present evidence or reasoning *to explain* why persons skilled in the art would not recognize in the original disclosure a description of the invention defined by the claims." Instead, the Office Action appears to draw conclusions without supporting reasons.

In this regard, Applicants further note that the written description does not have an *in haec verba* requirement. M.P.E.P. § 2163(I)(B). Accordingly, the claims may not be rejected merely because the claim fails to use precise language from the specification. Instead, the Office Examiner should fully examine the specification and the claims, and review such from the standpoint of *one of skill in the art* at the time the application was filed. M.P.E.P. § 2163(II)(A)(2). The most recent Office Action, however, fails to provide this requisite review from the standpoint of one of ordinary skill in the art. Moreover, Applicants respectfully submit that one of ordinary skill in the art would, upon a review of the original specification and claims, conclude that Applicants were in possession of the claimed invention.

For example, the Office Action states that the specification does not disclose that "the spatially reduced images in the new video stream include at least one B frame." One embodiment disclosed in the originally filed application describes a spatial transcoder which generates an output video stream having images of a reduced size. (¶¶ 34-36, Fig. 3). The transcoder receives an input stream and resamples the stream to reduce the image size, and thereafter generates the output video stream. (¶¶ 36, 37). Moreover, "to fully generate the output video stream [], *especially B frames* and P frames" reference images are made available to the stream generator within the transcoder. (¶¶ 37). Further, the originally filed application describes pictures in which an original picture 402 is transcoded into a new, spatially reduced picture 404. (¶ 42). As expressly noted in the application, the "pictures 402, and 404 can correspond to various types of pictures, for example, an I frame, *a B frame* or a P frame." (¶ 42).

Accordingly, the originally filed application expressly describes a spatial transcoder which receives original images that can include B frames and (1) spatially reduces the images; (2) generates an output video stream that includes the spatially reduced images; and (3) generates a video stream with B frames as a part of the output video stream. Applicants respectfully submit that the clear description of a spatial transcoder which outputs B frames as part of an output video stream would provide sufficient description for a person of ordinary skill in the art to conclude that the application describes wherein "spatially reduced images in the new video stream include at least one B frame" as recited in the pending claims.

As previously noted, the Office Action also asserts that the specification does not describe "spatially reducing images of the incoming video stream by a selected factor, and such

that the at least one B frame is considered during the spatially reducing images." One embodiment in the invention is described in the application to include resampling of a video stream to reduce the horizontal and vertical size of images in the video stream. (¶¶ 37, 39). In particular, the size of the new images is computed by using a factor to change the horizontal and vertical width of the images. (¶¶ 12, 39). Accordingly, the claim limitation is fully supported wherein the size of an image is spatially reduced by a selected factor. Moreover, as noted above, the specification expressly discloses wherein pictures, including B frames, of an original picture are passed through a transcoding process to a new, spatially transcoded video stream. (¶ 42). Necessarily, for the transcoding process to reduce the size of the B frame from the original stream to the size in the output, spatially reduced stream, it must be "considered" while being spatially reduced. Accordingly, the application discloses, at least implicitly, that a B frame is considered during spatial reduction of the image.

Applicants note that the pending claims have also been amended to recite wherein "at least one of the parameters [used to generate a new video stream that includes spatially reduced images] corresponds to the at least one B frame" decoded from an incoming video stream. Applicants respectfully submit that this recitation is fully supported in the specification. For example, one exemplary embodiment is described in which stream parameters from an input video stream are extracted and used by a spatial transcoder to generate a transcoded video stream. (¶ 36). The stream parameters may be found, by way of example, in a picture header or MB header. (¶ 33). A picture header may include parameters that indicate whether a frame is a B frame. (¶ 33). In addition, the MB parameters may include motion vectors and associated flags which are set based on whether a B frame is encountered. (¶¶ 33, 41, 46, 60).

Rejections Under 35 U.S.C. §§ 102(e) and 103(a)

As clarified by this paper, the transcoding and spatial reduction of the video stream includes reducing the size of the images in an incoming video stream horizontally and vertically by a selected factor, and such that in generating a new video stream of the spatially reduced images, at least one B frame is included in the images that have been reduced in horizontal and vertical size.

Although the cited art is generally directed to methods and systems for transcoding video, Applicants respectfully submit that it fails to anticipate or make obvious the claimed invention. In fact, Panusopone appears to teach the use of a spatial transcoder for reducing image size in a manner that is directly contrary to the recited claim embodiments.

Initially, Applicants note that Panusopone describes three embodiments of a transcoders. (*See abstract*). In particular, a low complexity front-to-back transcoder is described which has B frames disabled. (*See abstract*; Col. 4, ll. 12-14; Col. 6, ll. 24-26; Fig. 3). An additional transcoder architecture is described which minimizes drift error and has B frames enabled. (*See abstract*; Col. 4, ll. 15-17; Col. 7, ll. 10-12; Fig. 4). Finally, a size transcoder is described which has B frames enabled. (*See abstract*; Col. 4, ll. 18-19; Col. 18, ll. 35-40; Fig. 5).

Although the three embodiments are disclosed, Panusopone clearly describes different functions of the various transcoders. In particular, Panusopone discloses two distinct forms of transcoding—namely “format transcoding (MPEG-2 to MPEG-4) and size (spatial and temporal) transcoding.” (Col. 3, ll. 26-27). Accordingly, Panusopone describes transcoders that can *format* transcode or *spatially* (i.e. size) transcode an input bitstream.

Low Complexity Front-to-Back Transcoder

As described in Panusopone, the transcoders illustrated and described with respect to Figures 3-5 are each capable of *format* transcoding. (Col. 8, ll. 7-15). For example, the low complexity front-to-back transcoder of Figure 3 converts an MPEG-2 bitstream to an MPEG-4 bitstream. (Col. 6, ll. 24-33). Significantly, however, the transcoder described with respect to Figure 3 operates “with B frames disabled” and operates without operating at a spatial level. (Col. 6, ll. 24-33). Accordingly, the low complexity transcoder described in Panusopone disables B frames and appears to operate to only change between bitstream formats.

While Panusopone discloses that the low complexity transcoder (Fig. 3) changes bitstream formats, Panusopone fails, to disclose or suggest that the low complexity transcoder spatially reduces *the size of an incoming video stream horizontally and vertically*, as claimed in combination with the other recited elements. Moreover, inasmuch as the low complexity transcoder disables B frames, Panusopone also fails to disclose wherein an incoming video stream that includes at least one B frame is decoded, wherein parameters corresponding to the at

least one B frame are used to generate a new video stream, and wherein the images that have been spatially reduced in horizontal and vertical size include at least one B frame.

Transcoder Minimizing Drift Error

Panusopone further describes, with reference to its Figure 4, a second transcoder for minimizing drift error, and which changes a bitstream format from MPEG-2 to MPEG-4. (Col. 7, ll. 10-12; Col. 8, ll. 8-15; Fig. 4). The transcoder that minimizes drift error is B-frame enabled and can transcode bitstreams with B-frames. (Col. 7, ll. 24-26). In the transcoder, the initial bit stream is re-encoded in the MPEG-4 format by considering intra pixel data and performing a DCT function. (Col. 7, ll. 45-67).

While the transcoder for minimizing drift error, as described in Panusopone, changes a bitstream from an input MPEG-2 compliant stream to an output MPEG-4 compliant stream, Panusopone fails to disclose or suggest that the transcoder (Fig. 4) changes or spatially reduces *the size of an incoming video stream horizontally and vertically*, as claimed in combination with the other recited elements. Further, inasmuch as Panusopone fails to describe or suggest wherein the transcoder of Figure 4 spatially reduces the size of an incoming video stream horizontally and vertically, Panusopone also fails to suggest wherein the images that have been spatially reduced in horizontal and vertical size include at least one B frame.

Size Transcoder

Panusopone further describes, with reference to its Figure 5, a final transcoder which operates as a size transcoder that changes a bitstream format from MPEG-2 to MPEG-4 and which converts the output to a smaller size video. (Col. 18, ll. 35-53). For example, the transcoder may convert a bitstream from 720x480 to 352x240. (Col. 18, ll. 51-53).

In operation, the size transcoder achieves a bandwidth requirement for MPEG-4 by *skipping all B-frames* when subsampling the video, thereby reducing the temporal resolution and reducing complexity before downscaling. (Col. 18, ll. 54-62). Consequently, while "B frames may be present in the input bitstream" they are discarded by the transcoder and "*do not appear in the output bitstream.*" (Col. 18, ll. 37-40). As a result, while Panusopone appears to describe a size transcoder that reduces the size of images of an input bit stream, it clearly fails to describe wherein the spatially transcoded images that are of a reduced horizontal and vertical size and are

output from the transcoder include at least one B frame. In fact, Panusopone appears to teach away from including reduced size B frames in a new video output inasmuch as each transcoder in Panusopone that spatially reduces the size of input images also discards B frames such that they "do not appear in the output bitstream." In light of this clearly contrary teaching, Applicants respectfully submit that Panusopone should not be used in combination with any other cited art, including, but not limited to Wee, for purportedly teaching the claimed invention, in which the transcoding and spatial reduction of the horizontal and vertical size of images initially appears to include consideration and output of B frames. In other words, it would not make sense to modify Panusopone to do something that Panusopone expressly teaches against doing (i.e. including reduced size B frames in a transcoded video stream).

For at least these reasons, the remaining claims are also allowable over the cited art and need not be addressed individually. Nevertheless, Applicants will address dependent claim 60 and newly added claim 61. In particular, claim 60 depends from independent claim 1 and further recites wherein "generating a new video stream includes making available one or more reference images for the at least one B frame." In addressing claim 60, the Office Action states that Panusopone discloses "that the new video stream include at least one B frame." (Office Action, p. 11). Applicants respectfully note that this is not what is claimed. In particular, dependent claim 60 adds the limitation that reference images are made available for B frames. It appears that the Office Action has not recited any teaching in Panusopone regarding reference images made available for B frames while generating an output, and Applicants have found none in the cited art. Accordingly, Applicants submit that claim 60 is allowable over the art of record.

Claim 61 depends from independent claim 1 and recites wherein a selected factor "reduces a width of the images to be a factor of sixteen, and reduces a height of the images to a factor of thirty-two." Applicants respectfully submit that the cited art also fails to disclose reduction of image size in the claimed manner. For example, Panusopone discloses wherein an MPEG-2 bitstream is converted to an MPEG-4 bitstream. In the conversion, the size of the bitstream is reduced from 720 wide by 480 high to a size of 352 wide by 240 high. (Col. 18, ll. 51-53). Applicants note, however, that a reduced height of 240 is not a factor of 32 as required in the recited claim, and accordingly submit that Panusopone fails to disclose or suggest wherein

a reduced image height is a factor of thirty-two as recited in combination with the other claim elements.

In view of the foregoing, Applicants respectfully submit that the remaining rejections to the claims are now moot and do not, therefore, need to be addressed individually at this time. It will be appreciated, however, that this should not be construed as Applicants acquiescing to any of the purported teachings or assertions made in the last action regarding the cited art or the pending application, including any Official Notice. Instead, Applicants reserve the right to challenge any of the purported teachings or assertions made in the last action at any appropriate time in the future, should the need arise. Furthermore, to the extent that the Examiner has relied on any Official Notice, explicitly or implicitly, Applicants specifically request that the Examiner provide references supporting the teachings officially noticed, as well as the required motivation or suggestion to combine the relied upon notice with the other art of record.

For at least the foregoing reasons, Applicants respectfully submit that the pending claims are neither anticipated by nor made obvious by the art of record. In the event that the Examiner finds and remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, the Examiner is requested to contact the undersigned attorney.

Dated this 10th day of July, 2006.

Respectfully submitted,



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